DOCUMENT RESUME

ED 086 438 RC 007 611

AUTHOR Voelker, Stanley W.; Ostenson, Thomas K.
TITLE Rural-Urban Quality Differentials in North Dakota's Public School System.
INSTITUTION North Dakota State Univ., Fargo. Dept. of Agricultural Economics.
SPONS AGENCY Economic Research Service (DOA), Washington, D.C. Economic Development Div.
REPORT NO ND-AER-67
PUB DATE Mar 70
NOTE 29p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Achievement Tests; *Comparative Analysis; Curriculum; *Educational Quality; Enrollment Influences; *Public Schools; *Rural Education; School Personnel; Tables (Data); Teacher Education; *Urban Education
IDENTIFIERS *North Dakota

ABSTRACT

The data compiled for the North Dakota Statewide Study of Education and analyzed in this report indicated that, on the average, North Dakota urban school districts provided a higher quality of education than do rural districts. Two approaches were used to measure the relative quality of educational systems: (1) the direct or output approach, and (2) the indirect or input approach. Data reviewed in this report provided a comparison of the results of the 2 approaches. Most of the data was assembled for the 1965-66 school year, and included 601 state school districts. On the average the urban administrators, teachers, librarians, and counselors were better trained than those in rural districts. This is to be expected since the urban districts generally pay higher salaries. Urban high schools offered a much larger number of courses to their pupils than did rural schools, especially in the prevocational, vocational, natural and social sciences, and fine arts fields. The curricula of the smaller rural high schools tended to be drab and monotonous, providing few electives for individual students. The quality of education, as indicated by average test scores, varied directly with size of the school system; that is, the larger the enrollment, the higher the quality of education, as measured by both input and output data. (FF)

FILMED FROM BEST AVAILABLE COPY

Agricultural Economics Report No. 67

March 1970

U.S. DEPARTMENT OF HEALTH EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 086438

RECEIVED FEB 25 1974 NMSU E.R.I.C.

Rural-Urban Quality Differentials

IN NORTH DAKOTA'S PUBLIC SCHOOL SYSTEM

STANLEY W. VOELKER

and

THOMAS K. OSTENSON

DEPARTMENT OF AGRICULTURAL ECONOMICS
AGRICULTURAL EXPERIMENT STATION
NORTH DAKOTA STATE UNIVERSITY
FARGO, NORTH DAKOTA

IN COOPERATION WITH

ECONOMIC DEVELOPMENT DIVISION
ECONOMIC RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE

AC007611

TABLE OF CONTENTS

	Page
Introduction	1
Measures of Comparative Quality	1
The North Dakota Statewide Study of Education	3
School Districts and Attendance Areas	4
State Accreditation	7
Educational Attainment of Elementary Teachers	8
Educational Attainment of High School Teachers	10
Educational Attainment of Administrators	10
Average Salaries of Teachers and Administrators	13
High School Course Offerings	15
Assignment of Elementary Teachers to Combination Classes	17
Assignment of High School Teachers	19
Average Achievement Scores of High School Pupils on Standardized Tests	21
Summary and Conclusions	25

LIST OF TABLES

Number		Page
1	Elementary and High School Enrollment in North Dakota School Districts, Classified by Size and Type, September 30, 1965.	5
2	Percentage Distribution of High School Districts According to Type of Accreditation and Size and Type of District, 1965-66	9
3	Percentage of Elementary Teachers With Various Amounts of College Preparation, by Type of School District, 1965-66. .	11
4	Percentage of High School Teachers With Various Amounts of College Preparation, by Type of School District, 1965-66. .	12
5	Percentage of Elementary-School Administrators With Various Amounts of College Preparation, by Type of School District, 1965-66	13
6	Percentage of Secondary-School Administrators Wtih Various Amounts of College Preparation, by Type of School District, 1965-66	14
7	Annual Average Salaries of Full-Time Certified Teachers and Auxilliary Personnel, by Type and Size of School District, 1966-67	15
8	Annual Average Salaries of Full-Time Certified Administrative Personnel, by Type and Size of School District, 1966-67	16
9	Number of Course Offerings by North Dakota High School Districts, Classified by Size and Type, 1965-66	18
10	Average Number of Course Offerings Per Teacher, by Type of District and High School Enrollment, 1965-66.	20
11	Average Achievement Score of Ninth-Grade Pupils in North Dakota School Districts, Classified by Size and Type, November 1965	23
12	Average Achievement Scores of Eleventh-Grade Pupils in North Dakota School Districts, Classified by Size and Type, November 1965	24

RURAL-URBAN QUALITY DIFFERENTIALS IN NORTH DAKOTA'S PUBLIC SCHOOL SYSTEM

by Stanley W. Voelker[1] and Thomas K. Ostenson[2]

Introduction

It is frequently asserted that elementary and secondary schools in rural areas are of much lower quality than those in urban areas. To the extent that this is true, rural people may be adversely affected in several ways. Inferior education may put young people, who migrate from rural to urban areas, at a serious disadvantage in the competition for jobs. Poor education or inadequate vocational-training programs may hinder efforts to improve the economic opportunities of the residual rural population. Lower quality schools in rural areas may actually discourage industrial development needed to provide job opportunities locally for those displaced from agriculture.

Are rural schools very much inferior to urban schools? Data from the recently-completed North Dakota Statewide Study of Education provide several measures of the quality differentials between rural and urban schools.

Measures of Comparative Quality

Measurement of quality differentials between two or more school systems is not easy. Two approaches have been used in various attempts to measure the relative quality of educational systems: (1) The "direct" or "output" approach, and (2) the "indirect" or "input" approach. The data reviewed in this report provide a comparison of the results of the two approaches, as applied to North Dakota schools.

Under the direct methodology, differences in average achievement scores on standardized tests taken by the pupils are assumed to represent quality differentials among the school systems being compared. There are both theoretical and practical difficulties with this approach. Standardized tests are designed to measure the progress of individual pupils; their basic purpose is not to measure the quality of educational systems. Research has shown that intelligence and socioeconomic background of the pupils, as well

---

[1]Agricultural Economist, Economic Development Division, Economic Research Service, U.S. Department of Agriculture, Fargo, North Dakota.

[2]Assistant Professor, Agricultural Economics Department, North Dakota State University, Fargo, North Dakota.

as quality of the educational system, affect average achievement scores within each school or school district.[3] Pupils whose parents do not read magazines and newspapers regularly generally have lower achievement scores than pupils from families with more sophisticated literary tastes. In North Dakota, these differences in amount and kind of reading material in the pupils' homes frequently are related to racial or ethnic background. Standardized tests have been greatly improved in recent years. Perhaps additional research may enable development of methods for adjusting achievement-score statistics to neutralize the effect of factors other than the quality of the educational system.

The most serious practical difficulty with the direct approach is that many school districts, particularly those in rural areas, do not use standardized tests, and hence cannot be included in the comparison.

The indirect approach to measuring the quality of educational systems assumes that the quality of output (that is, the quality of education received by the pupils) varies directly with the quality (or assumed quality) of selected inputs. Some educators are unwilling to grant these assumptions. They question, for example, whether the amount of formal education of a teacher is an accurate measure of either his teaching ability or the quality of instruction received by his pupils. Most educational inputs can be--and usually are--measured in monetary terms, but unit costs are not always indicative of quality. There is also the question of whether high-quality supplementary reading materials, audio visuals, and other teaching aids can make up for the professional deficiencies of the teaching staff.

Despite these theoretical limitations, the indirect approach continues to be widely used because of certain obvious advantages. An example of this approach is the evaluative instrument developed by the National Education Association for use by local professional associations, boards of education, and administrators for comprehensive self-study and appraisal of their school systems.[4] All school accreditation plans are based largely on the indirect approach. Most of the necessary input data are readily available from periodic reports of local school administrators to state departments of public instruction. Moreover, these statistics usually are available from practically every district that operates a school in the state.

---

[3]See, for example, Kiesling, Herbert J., "Measuring a Local Government Service: A Study of School Districts in New York State," Review of Economics and Statistics, Vol. XLIX, No. 3, August 1967, pp. 356-67.

[4]"Profiles of Excellence: Recommended Criteria for Evaluating the Quality of a Local School System," Office of Professional Development and Welfare, National Education Association, Washington, D.C., 1966.

The North Dakota Statewide Study of Education

The North Dakota Statewide Study of Education was undertaken cooperatively by the North Dakota Department of Public Instruction, the North Dakota Legislative Research Committee, and the University of North Dakota by a research team under the direction of Dr. Kent G. Alm. The findings and recommendations have been published in a series of six pamphlets under the general title of "Educational Development for North Dakota, 1967-1975," as follows:[5]

(1) The Overview

(2) Educational Personnel in the North Dakota Public Schools

(3) Developing and Placing Educational Personnel in North Dakota

(4) Public Expenditure for Education in North Dakota

(5) A Plan of Public Expenditure for Education in North Dakota: The Foundation Program

(6) Developing State Leadership for Education in North Dakota

Most of the data assembled and analyzed by the Statewide Study were for the 1965-66 school year. Two of the 603 school districts in existence at the start of the 1965-66 school year were omitted from the study because they were involved in major reorganizations which prevented comparable data being obtained for certain parts of the study. The study did not include four public high schools that were operated by governmental units other than school districts in 1965-66: Benson County Agricultural School, Walsh County Agricultural School, Minot Model High School (at Minot State College), and Marmot High School (at the State Training School in Mandan). Also omitted from the study were 11 Federal Indian schools, four of which provided both elementary and high school instruction and seven only elementary instruction. All four of these Indian high schools and two of the 11 elementary schools were operated and funded jointly by the Bureau of Indian Affairs and local school districts, so that both Indian and non-Indian pupils could be served.

Of the 601 school districts included in the Statewide Study, 278 operated both elementary and high schools, 249 operated only elementary schools, and 74 did not operate any schools.

---

[5]Copies of these pamphlets may be obtained from the North Dakota Department of Public Instruction, Bismarck.

The Statewide Study did not make rural-urban comparisons *per se*, but indicated where and how the public school system could be improved. Most of the data were summarized by school districts, grouped according to accreditation status and the number of high school pupils enrolled in grades 9 through 12 on September 30, 1965. Since there is a close correlation between number of high school pupils and the total population of the largest municipality within a school district, districts can be classified as either "rural" or "urban," and data for the various groups of districts can be readily arranged for rural-urban comparisons.

None of the 256 high school districts with less than 300 pupils enrolled in grades 9 through 12 contained a city with 2,500 or more inhabitants according to the 1960 Census of Population. These districts are all definitely rural. The same is true for all nonoperating districts and those operating only elementary schools. On the other hand, the 13 school districts with 400 or more high school pupils contain the 13 largest urban centers of North Dakota, with 1960 populations ranging from nearly 3,300 to more than 46,000 (Table 1).

The nine districts with 300 to 399 high school pupils are in an intermediate group between the definitely rural and definitely urban groups. Two of these districts contain small cities that had 1960 populations of 2,613 and 2,972, respectively, and hence were classified as urban in the 1960 Census of Population. Two other districts contain small cities with 1960 populations slightly less than 2,500, but whose present populations probably exceed 2,500. These four small cities are farm service centers that perform the same functions and provide the same services as the other five cities in this group that have populations less than 2,500. Because of the definite orientation towards agriculture of all nine cities in this group, they are included with the rural districts for purposes of this report. This means that some of the pupils shown in Table 1 to be attending rural schools--possibly as much as 3 or 4 per cent--were actually urban residents in 1965-66.

Likewise, some rural pupils attend urban schools. Each of the 13 urban districts contains some rural territory and, very likely, at least a few of its pupils are from rural homes. Moreover, some urban districts operate buses to rural areas beyond their own boundaries. The number of rural pupils attending the 13 urban school systems is not known, but it is believed to be around 6 or 7 per cent of the total urban enrollment.

School Districts and Attendance Areas

The data analyzed in this report are by entire school districts, some of which consist of more than one attendance unit. Data for a multiple-unit district represent the average of all its attendance units and thus tend to mask existing differences in quality of education among the attendance units.

TABLE 1. ELEMENTARY AND HIGH SCHOOL ENROLLMENT IN NORTH DAKOTA SCHOOL DISTRICTS, CLASSIFIED BY SIZE AND TYPE, SEPTEMBER 30, 1965

Type of District and Number of Pupils Enrolled in Grades 9-12	Number of Districts in Each Class	Enrollment in Grades 1-8		Enrollment in Grades 9-12	
		Number of Pupils	Per Cent of Total	Number of Pupils	Per Cent of Total
	number	number	per cent	number	per cent
Urban High School Districts:					
1,000 or more	6	30,964	30.0	11,197	26.2
500 - 999	5	5,537	5.3	3,192	7.4
400 - 499	2	2,475	2.4	971	2.3
Total Urban Districts	13	38,976	37.7	15,360	35.9
Rural, Accredited High School Districts:					
300 - 399	9	5,665	5.5	2,963	6.9
200 - 299	24	10,523	10.2	5,468	12.8
150 - 199	28	10,442	10.1	4,900	11.5
100 - 149	37	9,068	8.8	4,411	10.3
75 - 99	45	7,972	7.7	3,792	8.9
50 - 74	39	5,019	4.8	2,416	5.6
25 - 49	15	1,416	1.4	631	1.5
24 or less	1	87	0.1	18	---[a]
Total Rural Accredited	198	50,192	48.6	24,599	57.5
Rural, Nonaccredited High School Districts:					
100 - 149	1	318	0.3	144	0.3
75 - 99	4	580	0.6	334	0.8
50 - 74	9	1,093	1.0	517	1.2
25 - 49	47	3,918	3.8	1,713	4.0
24 or less	6	365	0.3	114	0.3
Total Rural Nonaccredited	67	6,274	6.0	2,822	6.6
Graded Elementary Districts	81	5,539	5.4	0	0
One-Room Rural Districts	168	2,392	2.3	0	0
Nonoperating Districts	74	0	0	0	0
Total Rural Districts	588	64,397	62.3	27,421	64.1
Total All Districts	601	103,373	100.0	42,781	100.0

[a]Less than 0.05 per cent.

Source: "Public Expenditure for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, Table 4.

Each of the 13 urban school districts has more than one attendance unit. The number of graded elementary schools operated by these districts in 1965-66 varied from two to 13 per district. In addition, four of the districts operated two or more junior high schools and one of them operated two senior high schools.

The existence of two or more attendance areas in a district does not necessarily mean wide differences among the attendance areas in quality of education. The fact that these 13 districts generally ranked comparatively high in the quality measures used in this study strongly suggests that any quality differentials among attendance units within each district were only minor. If there was much variability among attendance units, one would expect the district averages to be lower than they were.[6]

Two of the urban districts operated one-room and two-room schools in outlying villages in 1965-66. The education provided by these outlying schools possibly was of lower quality than that offered by the completely graded systems in the cities, although no data are available to verify this. However, the number of classrooms in these outlying schools was too small a proportion of the district totals to have any appreciable effect on district averages.

Rural high school districts, more often than not, consisted of single-attendance areas. Only 31 (12 per cent) of the 265 rural high school districts operated one-room and two-room elementary schools in outlying areas in 1965-66. One of these districts also operated a small village high school of 65 pupils in addition to its main high school of 255 pupils. The quality of education in these outlying elementary schools may well have been below that of the graded systems in these districts, although a definite statement cannot be made because of lack of data. The outlying classrooms accounted for 25 to 50 per cent of the total classrooms in several of these districts; and in these cases, the data for outlying schools undoubtedly had substantial effects on district averages. Thirty-five of the 50 outlying schools operated by these 31 districts in 1965-66 were closed during the next two years, but whether the primary reason for these terminations was to provide better schooling for the children or to reduce district taxes is not known.

---

[6]Because some of the quality measures used in this study do not have upper limits, it is possible that one attendance unit in a district could score very low, while all others score very high. Data were not available to check this point, but the authors do not believe it is a serious problem, except in the few cases discussed in the text.

State Accreditation

Accreditation is the procedure by which effectiveness of a school system's total program is evaluated according to certain predetermined standards. The main purpose of accreditation is to stimulate improvement of local school systems. The present accreditation plan in North Dakota, which became effective in 1966, is based on minimum standards in a number of areas, including professional qualifications for administrators, teachers, counselors, and librarians; number and subject-matter of curriculum offerings; quality measures for libraries, equipment, school plant and grounds; and morale and attitude of staff and students.[7] Districts that operate only elementary schools are rated as either accredited or nonaccredited. Districts operating both elementary and high schools are rated as follows:

1A--The highest level of accreditation; comes close to meeting the requirements for a very good, comprehensive school system.

2A--The system meets more than the minimum requirements in a few areas.

3A--The system meets minimum requirements only.

Nonaccredited--The system fails to meet minimum requirements.

Some educators criticize the North Dakota accreditation system on the grounds that the minimum requirements are too low, especially at the 3A level. Accordingly, one of the recommendations of the Statewide Study was that all districts be upgraded immediately to at least the 2A level and that all parts of the state be reorganized into comprehensive, 12-grade districts, meeting the requirements for 1A accreditation by 1975 as a prerequisite for receiving state aid.

The minimum standards represent a broad concensus among professional educators regarding what is desirable and what is necessary in a school system. This means that a state accreditation rating should provide a fairly reliable index of the overall quality of a school system.

Seven of the 13 urban districts were accredited at the 1A level and five at the 2A level on March 1, 1966. The one urban district that was not accredited on this date had been accredited at the start of the 1965-66 school

---

[7]For description and specifications of the accreditation system, see "Administrative Manual for North Dakota Schools, 1967," Department of Public Instruction, Bismarck, pp. 24-91.

year and it subsequently received a 2A accreditation prior to March 1, 1967. Because of this, the Statewide Study properly included data for this district with those for the accredited systems. Only one of the 265 rural districts was accredited at the 1A level and only 31 were accredited at the 2A level, while 166 were rated 3A and 67 were nonaccredited (Table 2). Thus, 92 per cent of the urban districts, but only 12 per cent of the rural districts, were accredited at the 2A level or higher. The level of accreditation tended to vary with number of pupils in grades 9 through 12; that is, the smaller the enrollment, the higher the percentage of districts rated 3A or refused accreditation altogether. No district with a high school enrollment smaller than 300 was accredited at the 1A level and only three districts with high school enrollments less than 150 were accredited at the 2A level.

During the two-year period between March 1, 1966, and March 1, 1968, the rating of one urban district changed from nonaccredited to 2A, as noted above. Another urban district was upgraded from 2A to 1A, while none of them were downgraded. Nine of the rural districts were upgraded from 3A to 2A and six others were changed from nonaccredited to 3A, while 29 of the rural districts were downgraded (two went from 2A to 3A and 27 lost their 3A accreditation). Seven of the districts classified as 3A in 1966 and 12 of the nonaccredited high schools were discontinued prior to March 1, 1968.[8] As a result of these changes, the proportion of rural districts with 2A accreditation increased slightly, the proportion with 3A accreditation decreased from 62.6 to 53.3 per cent, and the proportion without accreditation increased from 25.3 to 30.9 per cent. There was a marked tendency for rural schools with more than 100 pupils in grades 9 through 12 to be upgraded. On the other hand, there was a marked tendency toward downgrading among districts with less than 100 pupils in grades 9 through 12. During this two-year period, then, the average quality of urban schools increased while the average quality of rural schools decreased, despite the fact that 19 of the low-quality rural schools were discontinued.

Educational Attainment of Elementary Teachers

Certification of teachers has been a function of the North Dakota Department of Public Instruction since the turn of the Century. For many years, the minimum requirements for certification were relatively low. In 1953, the Legislature increased the minimum requirements for elementary certification to a high school diploma plus one year of teachers' college.[9] A certificate, based on these minimum requirements, however, was valid for only three years and could be renewed only upon completion of 12 quarter-hours of additional

---

[8] "North Dakota Educational Directory," 1966-67 and 1968-69, North Dakota Department of Public Instruction, Bismarck.

[9] Session Laws 1953, ch. 137.

TABLE 2. PERCENTAGE DISTRIBUTION OF HIGH SCHOOL DISTRICTS ACCORDING TO TYPE OF ACCREDITATION AND SIZE AND TYPE OF DISTRICT, AS OF MARCH 1, 1966

Type and Number of Pupils Enrolled in Grades 9-12	Number of High School Districts	Percentage of Districts With Each Type of Accreditation			
		1A	2A	3A	Non-accredited
		pct.	pct.	pct.	pct.
Urban High School Districts:					
1,000 or more	6	83.3	16.7	0	0
500 - 999	5	40.0	40.0	0	20.0
400 - 499	2	0	100.0	0	0
All Urban Districts	13	53.8	38.5	0	7.7
Rural High School Districts:					
300 - 399	9	11.1	77.8	11.1	0
200 - 299	24	0	58.3	41.7	0
150 - 199	28	0	25.0	75.0	0
100 - 149	38	0	2.6	94.8	2.6
75 - 99	49	0	2.0	89.8	8.2
50 - 74	48	0	2.1	79.2	18.7
25 - 49	62	0	0	24.2	75.8
24 or less	7	0	0	14.3	85.7
All Rural Districts	265	0.4	11.7	62.6	25.3

Source: Compiled from data in "North Dakota Educational Directory" for 1965-66 and 1966-67, North Dakota Department of Public Instruction, Bismarck.

teachers' college work. A certificate based on the standard two-year teachers' college course, on the other hand, could ripen into a life certificate upon 18 months of successful teaching experience. The 1965 Legislature increased the minimum certification requirements to the standard two-year teachers' college course until July 1, 1969, after which date the minimum requirements are a baccalaureate degree in an appropriate field of study.[10]

[10]North Dakota Century Code, Sec. 15-36-04, as amended by S. L. 1965, ch. 138.

A bachelor's or master's degree, of course, is no guarantee of effective performance as a teacher. Nevertheless, the amount of formal education is widely considered the best single indicator of teaching quality. A teacher with four years or more of appropriate training, plus a few years of actual experience, usually will outperform the person who has less formal preparation.

In 1965-66, 67 per cent of the elementary teachers in urban districts had bachelor's degrees and 9 per cent had master's degrees. Less than one-fourth of the urban teachers lacked baccalaureate degrees while more than three-fourths of the rural teachers were in this category (Table 3). Elementary teachers in rural accredited 12-grade districts, on the average, had more formal preparation than those in the nonaccredited districts. Teachers in the one-room rural districts had the least amount of college training.

Educational Attainment of High School Teachers

In 1955, the North Dakota Department of Public Instruction initiated a policy requiring a college degree as a minimum requirement for certification of high school teachers, a policy that was enacted into law by the 1965 legislative session. As a result of this policy, all high school teachers held at least a bachelor's degree in an appropriate field of study in 1965-66.

Nearly 31 per cent of the high school teachers in urban districts had earned either the master's degree or the educational specialist diploma,[11] while less than 5 per cent of the high school teachers in rural districts had earned advanced degrees (Table 4). Among rural districts, there was not much difference between the accredited and nonaccredited districts in the percentage of high school teachers with advanced degrees.

Educational Attainment of Administrators

The manner in which the information on educational attainment of school administrators was presented by the Statewide Study prevents making an accurate comparison between rural and urban districts. The data, however, indicate that a much higher percentage of urban administrators have earned advanced degrees than has been the case with rural administrators.

---

[11] The educational specialist diploma is sometimes termed the "sixth-year program," because it provides a program of professional preparation intermediate between a master's degree and a doctor's degree. At present, the University of North Dakota offers sixth-year programs only in Educational Administration and in Counseling and Guidance.

TABLE 3. PERCENTAGE OF ELEMENTARY TEACHERS WITH VARIOUS AMOUNTS OF COLLEGE PREPARATION, BY TYPE OF SCHOOL DISTRICT, 1965-66

Type of School District	Percentage of Teachers With:					Total Number of Teachers
	Less Than Three Years of College	Three to Four Years College, But No Degree	Bachelor's Degree	Master's Degree	Total	
	per cent	per cent	per cent	per cent	per cent	number
Urban Districts:						
(400 or More Pupils in Grades 9-12)	1.8	22.2	67.3	8.7	100.0	1,569
Rural Districts:						
Accredited High School Districts	16.4	57.9	25.1	0.6	100.0	2,137
Nonaccredited High School Districts	18.3	64.1	17.6	0	100.0	306
Graded Elementary Districts	23.8	62.4	13.8	0	100.0	311
One-teacher Schools	42.2	50.9	6.9	0	100.0	218
All Rural Districts	19.2	58.5	21.8	0.5	100.0	2,972

Source: Compiled from data in "Educational Personnel in North Dakota Public Schools," Table 1; and "Public Expenditures for Education in North Dakota," Table 4, North Dakota Department of Public Instruction, Bismarck, December 1967.

TABLE 4. PERCENTAGE OF HIGH SCHOOL TEACHERS WITH VARIOUS AMOUNTS OF COLLEGE PREPARATION, BY TYPE OF SCHOOL DISTRICT, 1965-66

Type of School District	Percentage of Teachers With: Bachelor's Degree	Master's Degree	Educational Specialist Diploma	Total	Total Number of Teachers
	per cent	per cent	per cent	per cent	number
Urban Districts:					
(400 or More Pupils in Grades 9-12)	69.1	30.3	0.6	100.0	713
Rural Districts:					
Accredited High School Districts	95.0	4.9	0.1	100.0	1,545
Nonaccredited High School Districts	95.2	4.8	0	100.0	207

Source: Compiled from data in "Educational Personnel in North Dakota Public Schools," Table 1; and "Public Expenditures for Education in North Dakota," Table 4, North Dakota Department of Public Instruction, Bismarck, December 1967.

In all but the largest systems, elementary principals are also part-time teachers. The Statewide Study included data on 71 elementary administrators. Presumably these were the only full-time elementary administrators in the state. The Statewide Study indicated that most of these 71 were employed by the six urban districts that enrolled 1,000 or more pupils in grades 9 through 12.[12] More than 75 per cent of the elementary administrators in accredited high school districts had either their master's degree and/or educational specialist diploma. Almost all administrators in this group were employed by urban districts--not more than two or three of these were in rural districts. Only one of the six elementary administrators, known to be employed by rural districts, had an advanced degree (Table 5).

[12]Exceptions to this are a few relatively large rural districts that do not operate high schools, including Emerado, Maddock, Park River, Yellowstone District in McKenzie County, and New District in Williams County.

TABLE 5. PERCENTAGE OF ELEMENTARY-SCHOOL ADMINISTRATORS WITH VARIOUS AMOUNTS OF COLLEGE PREPARATION, BY TYPE OF SCHOOL DISTRICT, 1965-66

Type of School District	Percentage of Administrators With:				Total Number of Administrators
	Bachelor's Degree	Master's Degree	Educational Specialist Diploma	Total	
	per cent	per cent	per cent	per cent	number
Accredited High School Districts[a]	24.6	73.9	1.5	100.0	65
Nonaccredited High School Districts[b]	100.0	---	---	100.0	1
Graded Elementary Districts[b]	80.0	20.0	---	100.0	5
All Districts	29.6	69.0	1.4	100.0	71

[a]Mostly urban districts, although may include a few rural districts.

[b]Includes only rural districts.

Source: Compiled from data in "Educational Personnel in North Dakota Public Schools," North Dakota Superintendent of Public Instruction, December 1967, Table 1.

Nearly 5 per cent of the high school administrators in urban districts held doctor's degrees and 83 per cent held master's degrees. None of the high school administrators in rural districts had earned a doctor's degree. Nearly 70 per cent of the high school administrators in the larger rural districts (those with 150 to 399 pupils in grades 9 through 12) had master's degrees or educational specialist diplomas. Only 26 per cent of the administrators in the nonaccredited high school districts had advanced degrees (Table 6).

Average Salaries of Teachers and Administrators

The districts that pay the highest salaries generally hire and retain the most competent teachers and administrators. Average salary paid usually provides a fairly good index of the competence of the personnel employed, which in turn gives some indication of the relative quality of education supplied in the various groups of districts. Undoubtedly, individual cases do not conform to this general rule, but group averages provide a fairly reliable picture of the overall situation.

TABLE 6. PERCENTAGE OF SECONDARY-SCHOOL ADMINISTRATORS WITH VARIOUS AMOUNTS OF COLLEGE PREPARATION, BY TYPE OF SCHOOL DISTRICT, 1965-66[a]

Type of School District	Percentage of Administrators With: Bachelor's Degree	Master's Degree	Educational Specialist Diploma	Doctor's Degree	Total
	per cent	per cent	per cent	per cent	per cent
Urban Districts	11.9	83.3	---	4.8	100.0
Rural Districts:					
150-399 Pupils in Grades 9-12	30.3	69.0	0.7	---	100.0
Less Than 150 Pupils in Grades 9-12	43.6	54.5	1.9	---	100.0
Nonaccredited High School Districts	74.0	26.0	---	---	100.0
All Districts	34.2	63.8	1.2	0.8	100.0

[a]The percentages in this table were derived from information on 483 administrators. The number of these administrators in each type of district, however, is not known.

Source: Compiled from data in "Educational Personnel in North Dakota Public Schools," North Dakota Superintendent of Public Instruction, Bismarck, December 1967, Table 1.

Average salaries paid to full-time certified teachers, librarians, and guidance personnel in 1966-67 varied with size of district. The urban districts, as a group, paid higher average salaries than did the rural districts. Generally, the lowest salaries were paid by the rural districts with high school enrollments of less than 100 pupils and by rural districts that operated only elementary schools (Table 7).

A similar relationship exists between size of school and average salaries of administrative personnel. Salaries paid by urban districts averaged considerably higher in 1966-67 than those paid by rural districts (Table 8).

TABLE 7. ANNUAL AVERAGE SALARIES OF FULL-TIME CERTIFIED TEACHERS AND AUXILLIARY PERSONNEL, BY TYPE AND SIZE OF SCHOOL DISTRICT, 1966-67

Type of District and Number of Pupils Enrolled in Grades 9-12	Average Annual Salary, By Major Assignment			
	Elementary Teachers	Secondary Teachers	Librarians	Guidance Personnel
	dollars	dollars	dollars	dollars
Urban Districts:				
600 and over	6,133	7,035	6,988	8,459
500 - 599	5,955	6,774	6,981	7,822
400 - 499	5,425	6,325	6,159	7,584
Rural High School Districts:				
300 - 399	4,979	6,263	5,532	7,305
200 - 299	4,642	5,905	5,897	6,727
150 - 199	4,638	5,895	5,501	6,571
100 - 149	4,224	5,585	4,905	5,900
75 - 99	4,168	5,628	4,902	6,550
50 - 74	4,034	5,456	5,625	6,000
25 - 49	3,964	5,351	---	---
24 or less	3,604	5,254	---	---
Graded Elementary Districts	4,026	---	---	---
One-Room Rural Districts	3,839	---	---	---
All Districts	4,966	6,085	6,121	7,774

Source: "Public Expenditure for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, Appendix Table C-1.

High School Course Offerings

The following units of study must be made available to all students in each high school, at least once during each four-year period, if the school is to be accredited by the North Dakota Department of Public Instruction: English, four units; Mathematics, three units; Natural Science, four units; Social Studies, three units; Health and Physical Education, one unit; Music,

TABLE 8. ANNUAL AVERAGE SALARIES OF FULL-TIME CERTIFIED ADMINISTRATIVE PERSONNEL, BY TYPE AND SIZE OF SCHOOL DISTRICT, 1966-67

Type of District and Number of Pupils Enrolled in Grades 9-12	Average Annual Salary, By Major Assignment			
	Administrator	Supervisor, Coordinator, or Director	Elementary Principal	Secondary Principal
	dollars	dollars	dollars	dollars
Urban Districts:				
600 and over	15,788	10,276	10,044	10,376
500 - 599	13,333	9,274	8,508	10,687
400 - 499	12,100	6,192	8,525	8,900
Rural High School Districts:				
300 - 399	11,264	---	7,474	7,886
200 - 299	9,653	4,800	6,563	7,338
150 - 199	9,033	---	6,190	7,016
100 - 149	8,194	---	5,246	6,346
75 - 99	7,786	---	5,376	6,050
50 - 74	7,103	---	---	5,879
25 - 49	6,670	---	---	5,571
24 or less	6,125	---	---	---
Graded Elementary Districts	7,450	---	4,818	---
One-Room Rural Districts	---	---	---	---
All Districts	8,185	9,861	8,196	7,550

Source: "Public Expenditure for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, Appendix Table C-1.

one unit; and six units of any combination of the following subjects: Business Education, Foreign Language, Homemaking, Vocational Agriculture, and Industrial Arts.[13]

[13]North Dakota Century Code, sec. 15-41-24. A unit of work is 180 class periods with a minimum of 40 minutes per period for nonlaboratory courses and 55 minutes per period for laboratory courses.

All courses required for graduation must be offered in a logical sequence. English I (grade 9) and English II (grade 10), for example, must be offered every year, because they must be offered in sequence. Not all courses have to be offered every year. For example, Chemistry may be alternated with Physics, U. S. History with Problems of Democracy, and World History with Citizenship or with World Geography. Even with alternations, the minimum number of courses per year, for all practical purposes, would have to be about 17 or 18 in order to provide the 22 units during each four-year period to meet the minimum requirements for 3A accreditation. Such a limited program, however, would mean that practically all students would take essentially the same courses, regardless of individual differences and preferences. By way of contrast, the minimum annual requirements for 2A and 1A accreditation are 24 and 28 units, respectively.

Among the 13 urban districts, the number of course offerings in 1965-66 ranged from 43 to 93 with an average of 58. Among the rural accredited high school districts the number of course offerings ranged from 17 to 54 with an average of 29, while among the rural nonaccredited high school districts the number ranged from 10 to 35 with an average of 17 (Table 9).

The smallest accredited high school illustrates the extraordinary effort required to provide an accredited program for a small number of students. There were 18 pupils and five teachers in this school in 1965-66. These five teachers taught a total of 18 different courses, an average of $4\frac{1}{2}$ different courses per grade. The 1965-66 instructional cost was $1,121 per pupil or nearly three times the state average cost of $403 per pupil.

Assignment of Elementary Teachers to Combination Classes

According to the report of the Statewide Study: "In 1965-66, many North Dakota teachers were assigned combination classes. The reasons for these assignments rarely had to do with program innovation or team teaching. Rather, the assignments were imposed upon the school because of limited school enrollment."[14]

About 30 per cent of all rural elementary pupils attended combination classes in 1965-66. All teachers employed by the 168 one-room rural districts and 52 per cent of those employed by the 81 graded elementary districts were assigned to combination classes. The percentage of elementary teachers assigned to combination classes in the 265 rural high school districts could not be determined from the data compiled for the Statewide Study, but the study team's estimate of about 20 per cent seems reasonable. By way of contrast, less than 4 per cent of the teachers in urban districts were assigned

---

[14]"Public Expenditures for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, p. 33.

TABLE 9. NUMBER OF COURSE OFFERINGS BY NORTH DAKOTA HIGH SCHOOL DISTRICTS, CLASSIFIED BY SIZE AND TYPE, 1965-66

Type of District and Number of Pupils Enrolled in Grades 9-12.	Number of Districts	Number of Course Offerings, 1965-66		
		Least	Most	Average
	number	number	number	number
Urban:				
1,000 or more	6	51	93	71
500 - 999	5	45	50	48
400 - 499	2	43	43	43
All Urban Districts	13	43	93	58
Rural, Accredited:				
300 - 399	9	33	49	38
200 - 299	24	32	49	37
150 - 199	28	26	54	33
100 - 149	37	25	36	29
75 - 99	45	20	33	27
50 - 74	39	17	33	24
25 - 49	15	18	25	21
24 or less	1	18	18	18
All Rural, Accredited	198	17	54	29
Rural, Nonaccredited:				
100 - 149	1	35	35	35
75 - 99	4	22	28	26
50 - 74	9	11	26	20
25 - 49	47	10	22	16
24 or less	6	10	19	13
All rural, nonaccredited	67	10	35	17

Source: Compiled from "Public Expenditures for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, Table 5 and Appendix B, pp. 48-51.

to combination classes. According to the report of the Statewide Study, ".... it is clear that the larger 12-grade districts assign significantly fewer teachers to combination classes. In larger districts, moreover, most of those so assigned are music teachers, who provide special instruction at all grade levels. Consequently, it may be inferred that the number of children involved in undesired combination class instruction can be reduced in schools that are of relatively large size. The practice exists principally in small schools."[15]

Assignment of High School Teachers

In 1965-66, 47 per cent of North Dakota high school teachers were assigned only to classes in their major field of college preparation, 34 per cent were assigned to classes in two fields, and 19 per cent were assigned to classes in three or more fields. Some combining of fields is not necessarily objectionable from the standpoint of good pedagogy. Combination of fields is a practical necessity in small, rural high schools. A well-trained teacher should be able to teach creditably in two fields--his major and a strong minor.

Unfortunately for the small districts, teachers with the desired combination of majors and minors are not always available. As a result, some courses frequently are omitted from the curriculum or, if they are offered, have poorly prepared or unqualified teachers assigned to them. In 1965-66, nearly 6,000 North Dakota pupils, most of whom attended rural high schools, were instructed by teachers who taught in three or more different fields. Chances are that most of these students did not receive top quality instruction in one or more fields.

Most teachers can teach at either three or four levels of courses within their major fields. A properly prepared English teacher, for example, should be able to teach freshman, sophomore, junior, and senior courses in English, including grammar, composition, and literature. There are definite limitations, however, to the number of courses to which a teacher may be assigned. North Dakota accreditation requirements establish five periods (subjects and/or study halls) in a six-period day as the maximum for each teacher. This means that in a small high school, employing less than seven teachers, the average number of courses offered per teacher should not exceed 4.5. Any average above four course offerings per teacher suggests that some courses are taught by teachers with inadequate preparation.

In 1965-66, the number of course offerings per high school teacher averaged 1.1 in the urban districts, 3.7 in the rural accredited high school districts, and 5.6 in the rural nonaccredited high school districts (Table 10). In the case of both the urban and rural accredited districts, the average

---

[15] Ibid., p. 34.

TABLE 10. AVERAGE NUMBER OF COURSE OFFERINGS PER TEACHER, BY TYPE OF DISTRICT AND HIGH SCHOOL ENROLLMENT, 1965-66

Type of District and Number of Pupils Enrolled in Grades 9-12	Number of Districts	Average Number of Teachers Per District	Average Number of Courses Offered	Average Number of Courses Per Teacher
	number	number	number	number
Urban Districts:				
1,000 or more	6	87.8	71	0.8
500 - 999	5	28.8	48	1.7
400 - 499	2	21.0	43	2.0
Average, Urban Districts	13	54.8	58	1.1
Rural, Accredited High School Districts:				
300 - 399	9	17.5	38	2.2
200 - 299	24	12.2	37	3.0
150 - 199	28	10.5	33	3.1
100 - 149	37	7.4	29	3.9
75 - 99	45	6.0	27	4.5
50 - 74	39	4.9	24	4.8
25 - 49	15	4.0	21	5.3
24 or less	1	5.0	18	3.6
Average, Rural Accredited Districts	198	7.8	29	3.7
Rural, Nonaccredited High School Districts:				
100 - 149	1	6.0	35	5.8
75 - 99	4	5.6	26	5.2
50 - 74	9	3.4	20	5.9
25 - 49	47	2.8	16	5.7
24 or less	6	2.7	13	4.8
Average, Rural Non-accredited Districts	67	3.1	17	5.6

Source: "Public Expenditures for Education in North Dakota," North Dakota Department of Public Instruction, Bismarck, December 1967, Table 10.

number of course offerings per teacher varied inversely with the number of pupils enrolled in grades 9 through 12. This relationship did not hold true for the nonaccredited districts, because of the wide variation among these districts in number of course offerings.

Average Achievement Scores of High School Pupils on Standardized Tests

The North Dakota Department of Public Instruction finances a standardized testing program for all pupils enrolled in any public school system that elects to cooperate. This program includes: (1) A reading readiness test at the beginning of grade one; (2) a diagnostic test early in grade two; (3) general achievement batteries of tests in grades three through nine and in grade 11; and (4) general mental ability in grades four, seven, and nine. Inasmuch as the program is free of charge to local districts, an increasing number of them have been cooperating.

In November 1965, the general achievement batteries were administered to 8,454 ninth-grade pupils and 8,080 eleventh-grade pupils in North Dakota district high schools. These batteries included eight significant areas of academic achievement as follows:

Basic Social Concepts
Natural Science Background
Correctness of Expression
Quantitative Thinking
Interpretation: Social Studies
Interpretation: Natural Sciences
Interpretation: Literature
Uses of Sources of Information

The pupils who took these tests accounted for 71 per cent of all ninth graders and 76 per cent of all eleventh graders enrolled in district high schools in the fall of 1965. All but one of the urban high schools participated in the ninth-grade tests and all but two, in the eleventh-grade tests. On the other hand, only 184 (69.2 per cent) of the 266 rural high schools participated in the ninth-grade tests and 185 (69.5 per cent) in the eleventh-grade tests.

Since the tests were administered in November, the ninth-grade test scores probably were not affected very much by the few weeks of high school instruction, but reflected primarily the contribution of the eight years of elementary instruction. The composite achievement scores for the ninth graders attending the 184 rural high schools averaged 31.8, while the composite scores of those attending the 12 urban schools averaged 36.6, or 15 per cent higher. In general, the larger the high school enrollment, the higher the average composite achievement score, with one notable exception. The average score for the ninth graders in rural accredited high schools with enrollments of 50 to 74 pupils was higher than the averages for pupils in

larger high schools with enrollments of 75 to 199. The average scores for pupils in accredited high schools were higher than those for pupils in nonaccredited schools of the same size, except in the case of schools with 25 to 49 pupils (Table 11).

The eleventh-grade tests reflected the quality of two years of high school education as well as eight years of elementary instruction. The composite achievement scores for the eleventh graders attending the 12 urban high schools averaged 46.9, or about 10 per cent higher than the average composite score of 42.5 for eleventh graders attending rural high schools. As in the case of the ninth-grade achievement scores, there was a marked tendency for the average achievement scores to vary directly with the size of school, except that the average achievement score of pupils in the small accredited high schools with 50 to 74 pupils was higher than the averages in schools with 75 to 299 pupils. Also, the average achievement score of pupils in rural nonaccredited high schools with enrollments of 25 to 49 pupils was higher than the average of those attending accredited high schools of the same size (Table 12).

The 1965 average composite achievement scores indicate that, on the average, pupils in urban schools were receiving a higher quality education than their counterparts in rural schools. It is possible that the quality differential between urban and rural schools is actually greater than the 15-per cent differential indicated by the ninth-grade scores and the 10-per cent differential shown by the eleventh-grade scores. An estimated 7½ per cent of all ninth- and eleventh-grade pupils in 1965 received most, if not all, of their elementary education in schools operated by the 81 graded elementary districts and the 168 one-room rural districts. The quality of these two groups of elementary schools is highly variable. Some of the larger systems probably are quite comparable to the better 12-grade rural systems. The input data, discussed previously, indicate that these groups also contain many schools of the poorest quality. It is not known where the eighth-grade graduates of these 249 rural districts attend high school. If very many of them attended urban high schools in 1965 and if their elementary education was as poor on the average as the "input" data seem to indicate, the average composite achievement scores for the urban schools are lower than they would have been if only urban pupils attended these schools.

Since only 69 per cent of the rural high school districts participated in the 1965 testing program, the question immediately arises as to how representative these 185 districts are of all 265 rural high school districts. The program is entirely optional with the local school boards and administrators and the State Department of Public Instruction bears most of the cash cost. This suggests that the sample of rural districts may be biased somewhat toward the better school systems that are administered by more alert superintendents and principals under policies laid down by more progressive school boards. If this is actually the case, then the rural-urban differentials in quality of education would be greater than that indicated by rural-urban differences in average composite achievement scores in Tables 11 and 12. Moreover, any bias toward higher quality among the smaller rural high schools participating in the testing program might help to explain the discontinuities in the data on average test score and size of school, noted above.

TABLE 11. AVERAGE ACHIEVEMENT SCORE OF NINTH-GRADE PUPILS IN NORTH DAKOTA SCHOOL DISTRICTS, CLASSIFIED BY SIZE AND TYPE, NOVEMBER 1965

Type of District and Number of Pupils Enrolled in Grades 9-12	Total Number of Districts	Number of Districts in the Testing Program	Number of Pupils Tested	Average Composite Achievement Score[a]
	number	number	number	
Urban Districts:				
1,000 or more	6	6	2,994	36.7
500 - 999	5	4	868	36.5
400 - 499	2	2	255	35.8
Rural, Accredited High School Districts:				
300 - 399	9	8	682	33.0
200 - 299	24	21	258	32.8
150 - 199	28	21	995	31.9
100 - 149	38	23	712	31.4
75 - 99	45	27	624	31.3
50 - 74	39	24	389	32.7
25 - 49	15	11	133	29.7
24 or less	1	1	8	---[b]
Rural, Nonaccredited High School Districts:				
100 - 149	1	0	0	---
75 - 99	4	3	64	30.1
50 - 74	9	7	111	30.7
25 - 49	47	36	347	31.0
1 - 24	6	2	14	---[b]

[a]Averages of composite scores, Iowa Test of Educational Development. The "t-test" for significant differences among averages was established at the .01 level of confidence.

[b]Sample too small for a reliable average.

Source: "Public Expenditure for Education in North Dakota," North Dakota Superintendent of Public Instruction, Bismarck, December 1967, Table 6.

TABLE 12. AVERAGE ACHIEVEMENT SCORES OF ELEVENTH-GRADE PUPILS IN NORTH DAKOTA SCHOOL DISTRICTS, CLASSIFIED BY SIZE AND TYPE, NOVEMBER 1965

Type of District and Number of Pupils Enrolled in Grades 9-12	Total Number of Districts	Number of Districts in the Testing Program	Number of Pupils Tested	Average Composite Achievement Score[a]
	number	number	number	
Urban Districts:				
1,000 or more	6	6	2,611	47.3
500 - 999	5	3	476	45.3
400 - 499	2	2	200	45.8
Rural, Accredited High School Districts:				
300 - 399	9	8	639	44.8
200 - 299	24	20	1,032	43.4
150 - 199	28	22	931	42.2
100 - 149	38	23	668	41.5
75 - 99	45	28	555	42.6
50 - 74	39	24	368	43.9
25 - 49	15	10	106	38.1
24 or less	1	1	3	---[b]
Rural, Nonaccredited High School Districts:				
100 - 149	1	0	0	---
75 - 99	4	3	64	38.4
50 - 74	9	7	106	36.9
25 - 49	47	36	306	39.7
1 - 24	6	3	15	---[b]

[a] Averages of composite scores, Iowa Test of Educational Development. The "t-test" for significant differences among averages was established at the .01 level of confidence.

[b] Sample too small for a reliable average.

Source: "Public Expenditure for Education in North Dakota," North Dakota Superintendent of Public Instruction, Bismarck, December 1967, Table 7.

Summary and Conclusions

The data compiled for the North Dakota Statewide Study of Education and analyzed in this report indicate that, on the average, North Dakota urban school districts provide a higher quality of education than do rural school districts. The percentage of districts with 1A and 2A accreditation is higher among urban than among rural districts. On the average, the urban administrators, teachers, librarians, and counselors are better trained than those in rural districts. This is to be expected, since the urban districts generally pay higher salaries and can hire and retain the more competent people. There are fewer combination classes in elementary schools of urban districts and a much higher percentage of the urban high school classes are taught by teachers with appropriate college training--that is, with majors or strong minors in the particular fields taught. Urban high schools offer a much larger number of courses to their pupils than rural schools, especially in prevocational, vocational, natural and social sciences, and fine arts fields. The curricula of the smaller rural high schools tend to be drab and monotonous, providing few electives for individual students.

Data on "educational output"--average composite achievement scores on a battery of standardized tests--bear out the conclusions reached from analyses of the various measures of "input" quality. The quality of education, as indicated by average test scores, tends to vary directly with size of the school system; that is, the larger the enrollment, the higher the quality of education, as measured by both input and output data. This was found to be true for both urban and rural schools.

It must be emphasized that rurality does not of itself mean inferior schools. Some of the rural districts with more than 200 pupils enrolled in grades 9 through 12 appear to have school systems that are as good or better than some urban systems. A large administrative unit can provide high quality education in a rural area. Accordingly, the quality of education appears to correlate with the size of the enrollment, which in turn probably tends to vary with the total financial resources available for education in a school district.